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**Amendment and Response**

Applicant: Kirk Bresniker et al.

Serial No.: 09/923,976

Filed: August 7, 2001

Docket No.: 10012569-1

Title: SYSTEM AND METHOD FOR GRACEFUL SHUTDOWN OF HOST PROCESSOR CARDS IN A SERVER SYSTEM

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**REMARKS**

This is responsive to the Non-Final Office Action mailed February 8, 2007. In that Office Action, claims 1, 3-11, 13, 14, and 16-20 were rejected under 35 U.S.C. §101 for being directed to non-statutory subject matter. Claims 1, 2, 6, 9-15, 19, and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Berg et al., U.S. Patent No. 6,598,175 ("Berg") in view of Bilir, U.S. Patent No. 5,923,099 ("Bilir"). Claims 3-5 and 16-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Berg in view of Bilir and further in view of Hamre et al., U.S. Patent No. 5,530,302 ("Hamre"). Claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Berg in view of Bilir and further in view of Crawford et al., U.S. Publication No. 2002/0138772 ("Crawford").

With this Response, claims 1, 11, and 14 have been amended, and claims 2, 12, and 15 have been cancelled. Claims 1, 3-11, 13, 14, and 16-20 remain pending in the application and are presented for reconsideration and allowance.

**35 U.S.C. §101 Rejections**

Claims 1, 3-11, 13, 14, and 16-20 were rejected under 35 U.S.C. §101 for being directed to non-statutory subject matter. Independent claims 1, 11, and 14, have been amended herein to include limitations from dependent claims 2, 12, and 15, respectively. In view of the above, Applicant respectfully requests removal of the rejection of claims 1, 3-11, 13, 14, and 16-20 under 35 U.S.C. §101, and respectfully requests allowance of these claims.

**35 U.S.C. §103 Rejections**

Claims 1, 2, 6, 9-15, 19, and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Berg et al., U.S. Patent No. 6,598,175 ("Berg") in view of Bilir, U.S. Patent No. 5,923,099 ("Bilir"). Amended independent claim 1 is directed to "a host processor card configured to be fitted into a server system", and recites "a processor", "a memory coupled to the processor for storing an operating system", and "a graceful shutdown circuit coupled to the processor and the power control line, the processor configured to automatically provide a graceful shutdown signal to the graceful shutdown circuit based on a

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boot-up state of the operating system, the graceful shutdown circuit configured to allow a graceful shutdown of the host processor card when the power control line indicates that the host processor card is to be powered down if the processor has provided the graceful shutdown signal."

The Examiner acknowledged that "Berg does not specifically disclose the processor configured to automatically provide a graceful shutdown signal to the graceful shutdown circuit based on a status of the operating system". (Office Action at para. no. 6, page 4). Bilir discloses that the operating system issues a shutdown complete signal indicating that the shutdown tasks have been successfully performed by the operating system. (Bilir at col. 3, lines 35-38). However, Bilir does not teach or suggest "the processor configured to automatically provide a graceful shutdown signal to the graceful shutdown circuit based on a boot-up state of the operating system", as recited in independent claim 1. It should be noted that, with respect to claim 7, the Examiner stated that "Crawford [U.S. Patent Application No. 2002/0138772] discloses wherein the operating system is configured to write a value to the register indicating that a graceful shutdown is to be performed when the operating system boots up to a point that an immediate shutdown should not be performed [i.e. during boot-up, the power manager configures registers] [paragraphs 0056-0063]. (Office Action at para. no. 25, page 9). Applicant respectfully disagrees. The cited portions of Crawford refer to the boot-up of the power manager 102C, not the operating system of a host processor card, and the cited portions of Crawford include no teaching or suggestion that the operating system is configured to write a value to the register **indicating that a graceful shutdown is to be performed when the operating system boots up to a point that an immediate shutdown should not be performed**. Thus, like the Berg and Bilir references, Crawford also does not teach or suggest "the processor configured to automatically provide a graceful shutdown signal to the graceful shutdown circuit based on a boot-up state of the operating system", as recited in independent claim 1.

In view of the above, Berg and Bilir do not teach or suggest each and every limitation of independent claim 1. Applicant respectfully requests removal of the rejection of claim 1 under 35 U.S.C. § 103(a), and requests allowance of this claim. Since dependent claims 6, 9,

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and 10 further limit patentably distinct claim 1, and are further distinguishable over the cited references, claims 6, 9, and 10 are believed to be allowable over the cited references. Allowance of claims 6, 9, and 10 is respectfully requested.

Amended independent claim 11 is directed to "a graceful shutdown circuit for a host processor card configured to be fitted into a server system" and recites "a power control line for controlling the power state of the host processor card via a server management card of the server system", "a monitor circuit for monitoring the state of the power control line, the monitor circuit including a first output configured to be coupled to a processor of the host processor card to indicate the state of the power control line", "a first input configured to be coupled to a processor of the host processor card, the first input indicating whether a graceful shutdown is to be performed" and "a switch circuit coupled to the first input and the power control line, the switch circuit configured to override a power down signal from the server management card on the power control line and thereby maintain power to the host processor card via the power control line when the first input indicates that a graceful shutdown is to be performed."

With respect to independent claim 11, the Examiner stated that "[a]s per claim 11, it is rejected for similar reasons as stated above in claims 1, 8, and 9." (Office Action at para. no. 12, page 7). The Examiner's remarks regarding dependent claims 8 and 9 are addressed below.

With respect to dependent claim 8, the Examiner stated that "[a]s per claim 8, Berg discloses wherein the graceful shutdown circuit further comprises a monitor circuit coupled to the power control line and coupled to the processor, the monitor circuit configured to provide an indication of the status of the power control line to the processor [i.e. watchdog] [134, Figure 1; and col. 3, lines 58-col 4, lines 8]." (Office Action at para. no. 9, page 6). The watchdog process 134 disclosed in Berg is a software process that is executed by processor 101, and that generates a system call to the operating system 102 for a shutdown and restart. (Berg at col. 3, lines 58-66). Watchdog process 134 is not a monitor "circuit", is not coupled to a processor or a power control line that controls the power state of a host processor card of a server system, and does not provide an indication of the status of a power

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control line to a processor. The cited references do not teach or suggest a monitor circuit for monitoring the state of the power control line, the monitor circuit including a first output configured to be coupled to a processor of the host processor card to indicate the state of the power control line, as recited in independent claim 11.

With respect to dependent claim 9, the Examiner stated that “[a]s per claim 9, Berg does not specifically disclose a switch circuit coupled to the power control line and coupled to the processor, the switch circuit configured to override a power down signal on the power control line and thereby maintain power to the host processor card if the processor has provided the graceful signal to the graceful shutdown circuit. Bilir discloses a switch circuit coupled to the power control line and coupled to the processor, the switch circuit configured to override a power down signal on the power control line and thereby maintain power to the host processor card if the processor has provided the graceful signal to the graceful shutdown circuit [i.e. the main AC power restoration, and abort shutdown process] [col 3, lines 49-59].” (Office Action at para. no. 10, page 6). Bilir at col. 3, lines 49-59, which was cited by the Examiner, discloses that backup controller 50 detects when the main AC power is restored, and aborts the shutdown process. The cited portion of Bilir does not teach or suggest a switch circuit configured to override a power down signal from a server management card on a power control line and thereby maintain power to a host processor card via the power control line when the first input indicates that a graceful shutdown is to be performed, as recited in independent claim 11.

In view of the above, Berg and Bilir do not teach or suggest each and every limitation of independent claim 11. Applicant respectfully requests removal of the rejection of claim 11 under 35 U.S.C. § 103(a), and requests allowance of this claim. Since dependent claim 13 further limits patentably distinct claim 11, and is further distinguishable over the cited references, claim 13 is believed to be allowable over the cited references. Allowance of claim 13 is respectfully requested.

Amended independent claim 14 is directed to “a method of gracefully shutting down a host processor card in a server system”, and recites “providing a graceful shutdown indication from an operating system of the host processor card to a processor of the host processor card

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when the operating system boots up to a point that an immediate shutdown of the host processor card should not be performed" and "outputting a graceful shutdown signal from the processor when an immediate shutdown of the host processor card should not be performed."

With respect to independent claim 14, the Examiner stated that "[a]s per claim 14, it is rejected for similar reasons as stated above in claims 1, 8, and 9." (Office Action at para. no. 15, page 7). With respect to claim 1, the Examiner acknowledged that "Berg does not specifically disclose the processor configured to automatically provide a graceful shutdown signal to the graceful shutdown circuit based on a status of the operating system". (Office Action at para. no. 6, page 4). Bilir discloses that the operating system issues a shutdown complete signal indicating that the shutdown tasks have been successfully performed by the operating system. (Bilir at col. 3, lines 35-38). However, Bilir does not teach or suggest "providing a graceful shutdown indication from an operating system of the host processor card to a processor of the host processor card when the operating system boot up to a point that an immediate shutdown of the host processor card should not be performed", as recited in independent claim 14. It should be noted that, with respect to claim 7, the Examiner stated that "Crawford [U.S. Patent Application No. 2002/0138772] discloses wherein the operating system is configured to write a value to the register indicating that a graceful shutdown is to be performed when the operating system boots up to a point that an immediate shutdown should not be performed [i.e. during boot-up, the power manager configures registers] [paragraphs 0056-0063]. (Office Action at para. no. 25, page 9). Applicant respectfully disagrees. The cited portions of Crawford refer to the boot-up of the power manager 102C, not the operating system of a host processor card, and the cited portions of Crawford include no teaching or suggestion that the operating system is configured to write a value to the register indicating that a graceful shutdown is to be performed when the operating system boots up to a point that an immediate shutdown should not be performed. Thus, like the Berg and Bilir references, Crawford also does not teach or suggest "providing a graceful shutdown indication from an operating system of the host processor card to a processor of the host processor card when the operating system boot up to a point that an

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immediate shutdown of the host processor card should not be performed", as recited in independent claim 14.

In view of the above, Berg and Bilir do not teach or suggest each and every limitation of independent claim 14. Applicant respectfully requests removal of the rejection of claim 14 under 35 U.S.C. § 103(a), and requests allowance of this claim. Since dependent claims 19 and 20 further limit patentably distinct claim 14, and are further distinguishable over the cited references, claims 19 and 20 are believed to be allowable over the cited references. Allowance of claims 19 and 20 is respectfully requested.

Claims 3-5 and 16-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Berg in view of Bilir and further in view of Hamre et al., U.S. Patent No. 5,530,302 ("Hamre"). Dependent claims 3-5 and 16-18 further limit patentably distinct claims 1 and 14, respectively, are further distinguishable over the cited references, and are believed to be allowable over the cited references. Allowance of claims 3-5 and 16-18 is respectfully requested.

Claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Berg in view of Bilir and further in view of Crawford et al., U.S. Publication No. 2002/0138772 ("Crawford"). Dependent claim 7 further limits patentably distinct claim 1, is further distinguishable over the cited references (see, e.g., Applicants remarks above with respect to claims 1 and 14), and is believed to be allowable over the cited references. Allowance of claim 7 is respectfully requested.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 1, 3-11, 13, 14, and 16-20 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1, 3-11, 13, 14, and 16-20 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

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The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Response should be directed to either David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854 or Jeff A. Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper or papers, as described herein, are being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (571) 273-8300 on this 29<sup>th</sup> day of March, 2007.

By: Jeff A. Holmen  
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